



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

one could exactly reproduce the color triangle described, though the author's generous offer of samples of colored paper with coefficients of saturation determined, might for the present supply this defect.

E. C. S.

Eine neue Theorie der Lichtempfindungen. CHRISTINE LADD FRANKLIN. *Zeitschrift für Psychologie*, IV. 1892, 211-221. This paper is a full statement of matter presented in abstract at the International Congress of Experimental Psychology in London, 1892. The author's abstract will be found in the Proceedings of the Congress, pages 103-108, also in the *Johns Hopkins University Circulars*, June, 1893, and in *Science*, July 14, 1893.

On Theories of Light Sensation. CHRISTINE LADD FRANKLIN. *Mind*, Ser. 2, II. 1893, 473-489.

To propose a new theory for matters so long and carefully studied as those of physiological optics is a considerable feat, but one that Mrs. Franklin has accomplished with such success as to receive friendly notice in the address of the president of the British Association (*Nature*, Sept. 14, 1893, p. 469). The author's own abstracts are so accessible that no summary of her theory need be given here. Suffice it to say that, like all the better modern theories, it has been given a photochemical form. Two visual substances are assumed in the retina, one whose decomposition yields the stimulus for white (sensations of the black-gray-white series) and another whose decomposition is different for different kinds of light, giving by partial decomposition the stimuli for red, green and blue, and by complete decomposition the same decomposition-product as the first visual substance, and thus also the white sensation. How the theory fits with various classes of facts is set forth in the original, together with the chief difficulties in the current theories of Helmholtz and Hering. The theory most resembling this of Mrs. Franklin's is that of Donders, by whose this was in a measure suggested. Completeness is too much to expect in an account that the author herself regards as tentative, and some gaps may have been purposely left to be filled hereafter. Something certainly should be said with reference to black, and the explanation of simultaneous contrast will need radical revision.¹ A great advantage of the theory is that it makes the phenomenon of complementary colors a matter of retinal chemistry, instead of a matter of mingled sensations or of opposing anabolic and katabolic processes. Its assumption of three primary colors enables it also to avoid the difficulties that color-blindness offers to four-color theories.

E. C. S.

Grundzüge der Physiologischen Psychologie. WILHELM WUNDT. Vierte umgearbeitete Auflage. Engelmann, Leipzig, 1893. Two vols., pp. xvi. 600, and xii. 684.

In this fourth edition, Wundt's standard work has received a general revision and an increase of nearly 180 pages, of which two-thirds is in the second volume. The main changes specified by the author, aside from such as were needed to bring the work abreast of present information, have been in the way of greater explicitness in the description of psycho-physiological methods and apparatus, and many new cuts of apparatus have been added. These changes will make the work more necessary than ever to the many laboratories now getting under way. The value and convenience of the

¹The reviewer understands that this matter has already received the author's attention.

new edition would have been increased if the parts newly added had been indicated, as in the new edition of Helmholtz's *Optik*.

Experimentelle Beiträge zur Untersuchung des Gedächtnisses. Von G. E. MÜLLER und F. SCHUMANN. *Zeitschrift f. Psy. u. Phys. d. Sinnesorgane.* Bd. VI. 2, 3, 4 and 5. 1893, 192 pages.

According to the modest statement of the authors, the aim of these series of experiments, which have been made at intervals from 1887 to 1892 inclusive, is not so much to add a number of important and interesting facts to the science of memory as to test and develop the experimental method introduced by Ebbinghaus.

While it is perhaps possible to summarize briefly the numerical results obtained, only a slight suggestion can be given of the praiseworthy spirit of experimental carefulness and thorough criticism in which the work has been done. The original must be referred to also for all details, since only the general plan can be mentioned. There are in all thirteen series of experiments, each usually extending over several months.

The procedure in the first two experiments resembles that of Ebbinghaus, except that the syllables are read off through a slit from a revolving drum, and that the experimenter and the subject are different persons. This mode of presenting the syllables was retained to the end and has the advantage of permitting only one syllable to be seen at a time, so that we have to deal with successive association exclusively. The rate with which they are presented can be easily regulated and the experimenter controls the correctness of the repetitions. Certain irregularities were observed in the nonsense material, and a new plan of constructing it devised for subsequent experiments.

The seventeen initial and twelve end consonants, and the twelve vowels and diphthongs used were written on cards and placed in three boxes. A syllable was made by taking one card haphazard from each box. Since they only used twelve syllable series, this method enabled them to construct what they call normal series, each of which has the following properties: All initial and end consonants and vowels are different. The initial consonant is not the same as the end consonant of the preceding syllable, or the end consonant of the second syllable of the same measure. Successive syllables do not form familiar words. Repetition of the same syllable is avoided till after a considerable time. All series, whether original or derived, are normal. Various ingenious devices make the otherwise laborious task of bringing this about comparatively easy.

The number of readings required for the first correct repetition is taken as the measure of the work done.

The central value as well as the arithmetical average are given for any given set of observations. The errors of psychological measurements are asymmetrical with respect to the average. There is much greater possibility of making large positive than large negative errors. The central value, which represents that number in a series of observations above and below which an equal number of records is to be found, is accordingly smaller than the average and represents more nearly the most probable observation.

Experiments I. to V.—A series of nonsense syllables is naturally read in a certain rhythm, preferably trochaic. The problem of the experiment was to see whether the associative bond was stronger between syllables of the same measure than between the adjacent syllables of different measures.